RADIOBAND SYSTEM INSTALLATION MANUAL

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1. INTRODUCTION

1.1 System description

The Radioband system is designed for installation with a safety edge in automatic garage door and gate installations.
This system allows for wireless safety edge – control panel connection.

To install this system, you must follow the advice included in this manual and take the requirements of the applicable normative into account.

1.2 Normative requirements

The directives applicable to this system are:

- 98/37/EC Machines Directive
- 73/23/EEC Low Voltage Directive
- 2004/108/EC Electromagnetic Compatibility Directive
- R&TTE 1999/5/EC Radio and telecommunication terminal equipment Directive

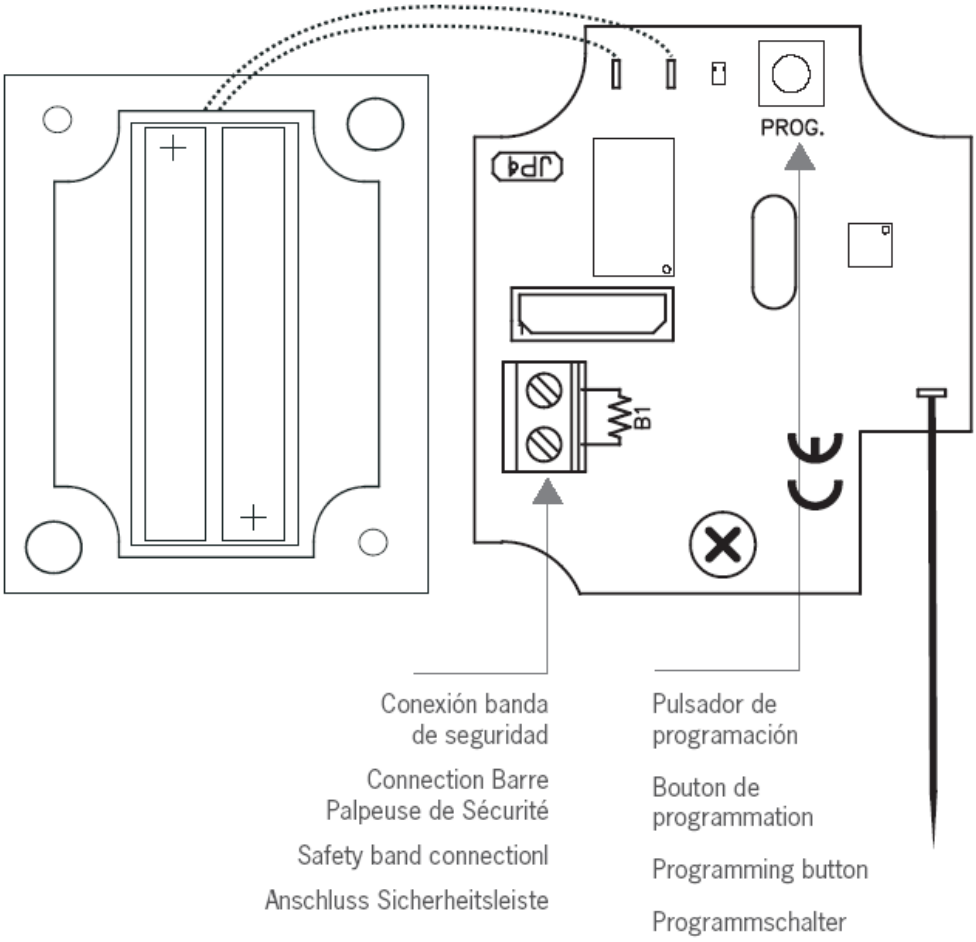
Below are some of the requirements of the applicable harmonised standards:

In accordance with the European low voltage directive, you are informed of the following requirements:
· For permanently connected equipment, an easily accessible connection device must be incorporated into the cabling.
· This equipment must be installed in a vertical position and firmly fixed to the structure of the building.
· This equipment may only be handled by a specialized installer, by maintenance staff or by a properly instructed operator.
· The instructions for use of this equipment must always remain in the possession of the user.
· Terminals with a maximum section of 3.8mm2 must be used to connect the cables.

- The frequency of the Radioband system does not interfere in any way with the 868 MHz remote control systems. However a signal centred at 868,9MHz may cause a delay on the reaction of the system.
- Always connect the door structure and metal parts to an earthing connection.
- Do not share the power and signal supply.

2. THE SYSTEM

2.1 RADIOBAND/T



Operating frequency	868.90MHz
Power supply	3V DC (2 x 1.5V LR03 AAA)
Op. consumption	12mA
Radiated power	< 25mW
Op. temperature	-20ºC - +55ºC
Seal	IP67
Dimensions	85 x 53 x 36mm
Range (guaranteed)	10m
Battery life	2 years
Minimum time between two RADIOBAND/T activations (for complying with the R&TTE Directive)	7 min

INSTALLATION AND CONNECTIONS

Fix the back of the box to the door. Install the transmitter following the technical manual and avoid placing metallic surfaces between the receiver and the transmitter. Pass the cables through the bottom of the transmitter. Connect a resistive 8K2 safety band directly to terminal B1 and ensure that the safety edge keeps totally waterproof. Fix the front of the transmitter to the back with the screws supplied for the purpose.

N.B.: If a non-resistive element (with a contact normally closed) needs to be connected, the jumper JP4 must be bridged. This application does not comply with safety standard EN 12453 for the use of motorised garage doors, since the connection of the resistive element to the RADIOBAND/T is not checked.

OPERATION

The receiver checks that all the programmed bands are working properly. If a band is activated or if there is an error in its operation, the receiver activates the output relay.

PROGRAMMING RADIOBAND/T

If the receiver is in programming (see MANUAL PROGRAMMING on page 10 or 16), press the transmitter button to programme it into the receiver.

TRANSMITTER BATTERY LOW INDICATOR (RADIOBAND/T)

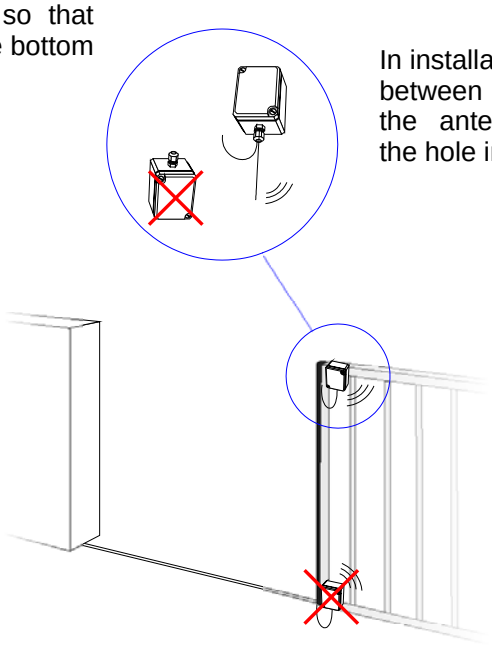
If the battery of a transmitter programmed into the receiver becomes low, it will give out 4 short signals every 20 seconds. If there is more than one transmitter programmed, the safety band must be activated to check whether the receiver then makes these 4 short signals. If this is the case, the transmitter connected to the activated safety band will be the one with the low battery. Change it.

CHANGING THE BATTERY

Remove the box cover. The batteries are positioned on the back of the cover. Replace the two used batteries with new ones, taking into account the polarity indicated by the connector. **Check that the new batteries support the same temperature range as those they are replacing.**

INSTALLATION ADVICE

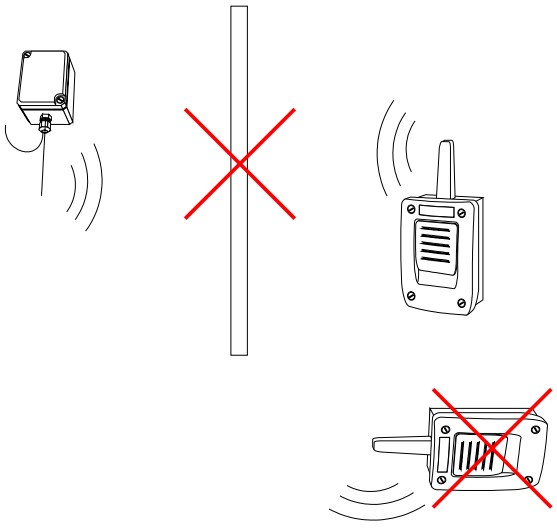
Install the equipment so that the cable outlet is at the bottom



In installations likely to have range problems between the transmitter and the receiver, the antenna must stand vertically from the hole in the gland

Do not fit the equipment at ground level

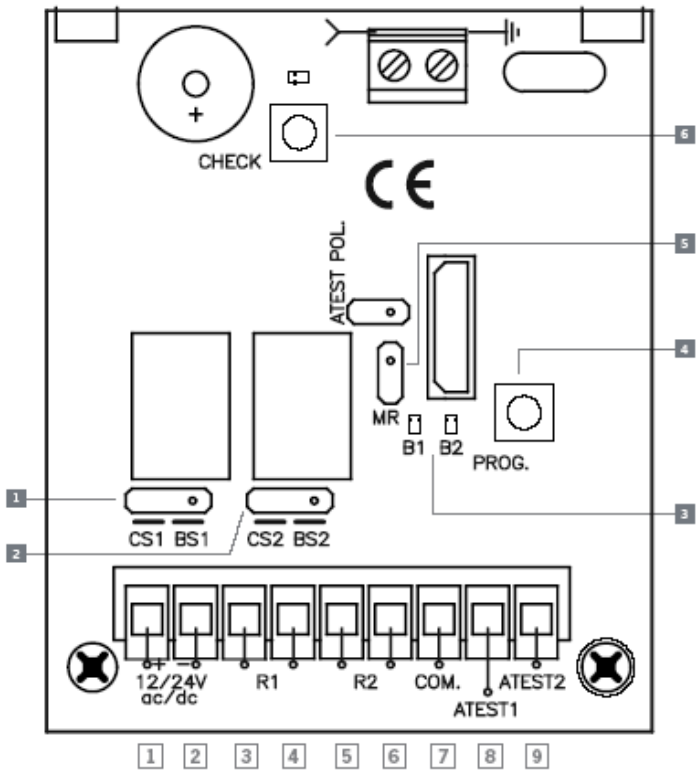
Do not place metal surfaces between the transmitter and the receiver



The transmitter and receiver antenna must be parallel to each other for optimum signal reception

*** Once the system has been installed, check it works correctly by enabling the safety edge on the ends of the door.**

2.2 RADIOBAND/R



1 Puente Selector R1
Pontet Sélecteur J3
Selector Bridge R1
Steckbrücke R1

2 Puente Selector R2
Pontet Sélecteur J4
Selector Bridge R2
Steckbrücke R2

3 Leds de indicación activación relés
Leds de signalisation activation des relais
Relay activated indicator lights
(and low battery in Radioband-T)
Anzeigeleds für die Aktivierung des Relais
(und Batterie fast leer in Radioband T)

4 Pulsador de programación
Poussoir de Programmation
Programming button
Programmier-schalter

5 Puente de Reset Total MR
Pontet MR pour effacement des RADIOBAND-Transmetteurs
Total Reset Bridge MR
Reset-Überbrückung Total MR

6 Led y pulsador de verificación
Led et poussoir de vérification
Check led and check button
Check-Led und Check-Taster

Frequency	868.90MHz
Memory	6 Radioband-T (3 on relay 1, 3 on relay 2)
Number of relays	2 relays
Power supply	12/24V AC/DC
Power supply range	9-35V DC 8-28V AC
Relay contacts	1A
Consumption: idle/op.	18mA/80mA
Self-test input	2 0/12/24V AC/DC inputs with selectable polarity
Power	< 25mW
Op. temperature	-20ºC to +85ºC
Seal	IP54 (with IP65 cable seals)
Box size	82 x 190 x 40mm
Range (guaranteed)	10 metres

INSTALLATION AND CONNECTIONS

Fix the back of the box to the wall, using the wall plugs and screws supplied. **Install the receiver, close to the door and avoid metal surfaces between the receiver and the transmitter.** Pass the cables through the bottom of the receiver. Connect the power cables to the terminals of the printed circuit, following the indications of the connections diagram. Store RADIOBAND-T. Fix the front of the receiver to the back with the screws supplied for the purpose.

1- Power supply 12/24V AC/DC: (+)
2- Power supply 12/24V AC/DC (-)
3,4- R1: Connection to the safety band input of the control panel (resistive contact 8.2kΩ) with jumper in position BS1 (see CONNECTIONS Figure 1). Or to the control panel safety contact input (NC) with jumper in position CS1 (see CONNECTION Figure 2).
5,6- R2: Connection to a second safety band input of the control panel (resistive contact 8.2kΩ) with jumper in position BS2. Or to the control panel safety contact input (NC) with jumper in position CS2.
7- AUTOTEST: Common connection safety self-test (-). See CONNECTIONS Figure 3 and table POLARIZED SELF-TEST.
8- AUTOTEST: Self-test connection for R1. See CONNECTIONS Figure 3 and table POLARIZED AUTO-TEST.
9- AUTOTEST: Self-test connection for R2. See CONNECTIONS Figure 3 and table POLARIZED AUTO-TEST.

POLARIZED AUTO-TEST

Check the auto-test output on the control panel, in standby, to see whether the voltage is 0V (inverted test input) or 12/24V AC/DC (positive polarity). The auto-test signal of the panel must remain at its maximum for 2 seconds.

	Autotest output in standby	Autotest output activated	Polarity type	Jumper ATEST POL	ATEST1	ATEST2
Connection to a equipment with autotest	0V	12/24V	Positive	OFF	Connected*	Connected*
	12/24V	0V	inverted	ON	Connected*	Connected*
Connection to a equipment without autotest**	---	---	---	OFF	No connected	No connected

* N.B.: Only connect the auto-test output to be used.

** Where the auto-test is not used, the system is not checked at the start of the operation, which means that security normative EN 12453 regarding the use of motorised garage doors is, in some cases, not complied with.

LIGHT INDICATORS

RADIOBAND/R-RC-RCS	In operation	In programming
Relay 1 LED	Normally off. Indicates the status of the relay output. If R1 is not connected, on.	On. Indicates the channel to be programmed.
Relay 2 LED	Normally off. Indicates the status of the relay output. If R2 is not connected, on.	On. Indicates the channel to be programmed.

OPERATION

The receiver checks that all the programmed bands are working properly. If a band is activated or if there is an error in its operation, the receiver activates the output relay.

MANUAL PROGRAMMING

RADIOBAND-R makes it possible to store 6 RADIOBAND-Ts (3 on Relay 1 and 3 on Relay 2).

Press the receiver programming PROG button for 1s; a sound signal will be heard. The receiver will go into programming the first relay. If the programming button is kept pressed, the receiver will go into programming the second relay, moving cyclically from one really to another. Once the programming relay has been chosen for the transmitter you want to start using, send the programming code by pressing the transmitter. Every time a transmitter is programmed, the receiver will emit a sound signal for 0.5s. If 10 seconds pass without programming, the receiver will go out of programming mode, emitting two 1s sound signals. If, when programming a transmitter, the receiver's memory is full, it will emit 7 sound signals lasting 0.5s and come out of programming.

Note: For a right operation of the system, the transmitter has to be programmed in one receiver only.

RADIOBAND/T replacement: In case you need to replace a RADIOBAND/T, it is necessary to reset the system (see TOTAL RESET on next page) and reprogram all RADIOBAND/T used in the installation.

SYSTEM CHECK

This function has to be used to check the operation and range of all the devices once the installation has been carried out.

Press the receiver's CHECK button for at least 1 second to enter check mode. The indicator light will come on and four beeps will be heard.

Perform a complete door opening and closing manoeuvre. During the system check a beep will be heard every 1,5 seconds.

CORRECT OPERATION OF THE SYSTEM

If no other acoustic signal is heard on completing the manoeuvre, the system is operating correctly. Either press the CHECK button again or wait 5 minutes and the RADIOBAND/R will exit checking automatically, indicating with two beeps that the check has been correct. The check indicator light will go out.

DETECTION OF BAND FAILURE

If the communication with a RADIOBAND/T fails during checking, or the communication is deficient (for instance, too many communication retries or poor coverage), the RADIOBAND/R emits three consecutive beeps, indicating that an error has occurred. Halt the door manoeuvre and press the safety bands installed to detect what has failed.

- If a single beep is heard on pressing a band, this means that the band is correct.
- If three consecutive beeps are heard on pressing the band, this means that the band has failed.
  In this event, it is recommended changing the orientation of the transmitting-receiving aerials or installing an AED-868 or FLAT-868 outdoor aerial to ensure the desired range.

On exiting check mode, seven consecutive beeps will be heard and the indicator light will flash continuously.
Perform another system check until the result is correct.

Signal coverage

After pressing one of the installed bands, continuous flashes, ranging from 1 to 5, indicate the signal coverage for this band at the time it was pressed.

Number of check LED flashes	Coverage	Result of check
1	Very weak	Band failure
2	Weak	OK
3	Normal	OK
4	Good	OK
5	Very good	OK

TOTAL RESET

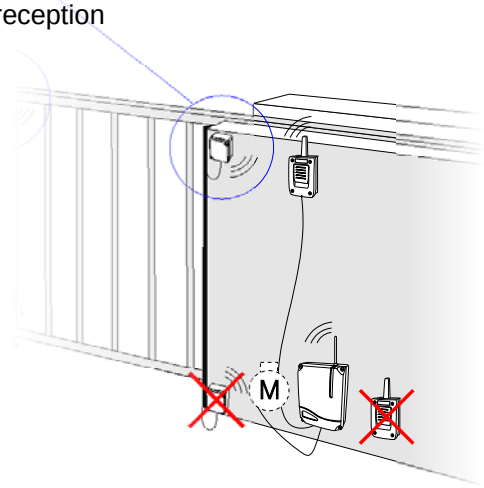
In programming mode, keep the programming PROG button pressed down and make a bridge with the "MR" reset jumper for 3s. The receiver will emit 10 warning sound signals and then more at a faster frequency, indicating that the operation has been carried out. The receiver will stay in programming mode.
If 10 seconds elapse without programming, or if you press the programming button quickly, the receiver will go out of programming mode, emitting two 1s sound signals.

TRANSMITTER BATTERY LOW INDICATOR (RADIOBAND/T)

If the battery of a transmitter programmed into the receiver becomes low, it will give out 4 short signals every 20 seconds. If there is more than one transmitter programmed, the safety band must be activated to check whether the receiver then makes these 4 short signals. If this is the case, the transmitter connected to the activated safety band will be the one with the low battery. Change it.

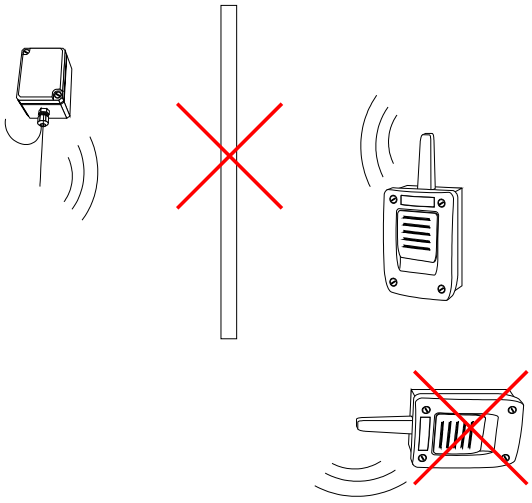
INSTALLATION ADVICE

The transmitter and receiver antenna must be parallel to each other for optimum signal reception



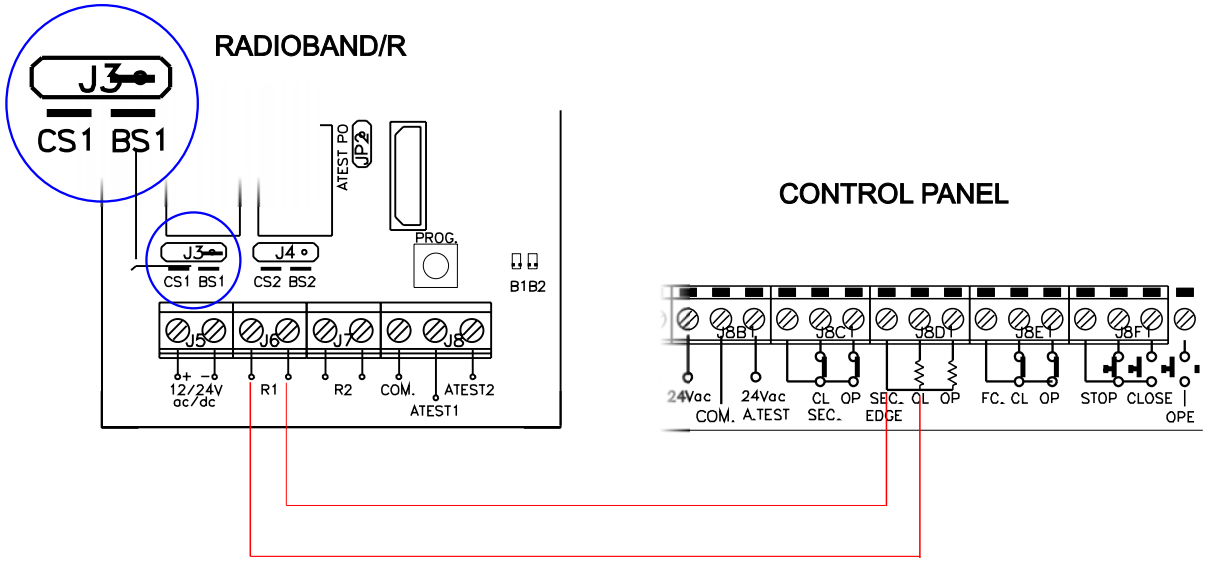
Do not fit the equipment at ground level

Do not place metal surfaces between the transmitter and the receiver



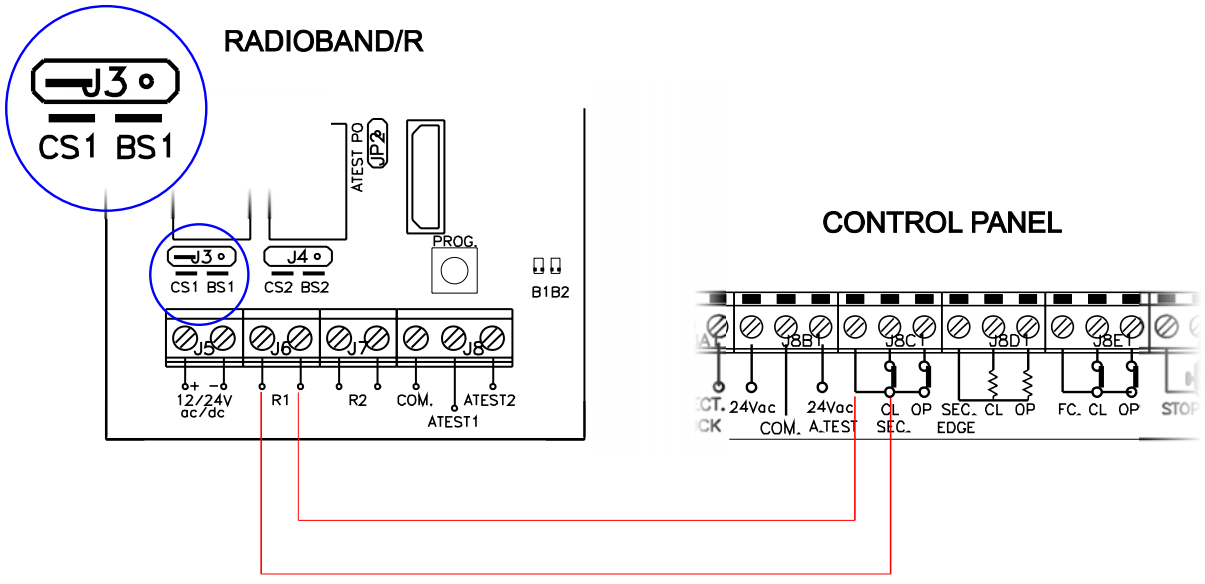
The transmitter and receiver antenna must be parallel to each other for optimum signal reception

a) Connection to safety edge inlet



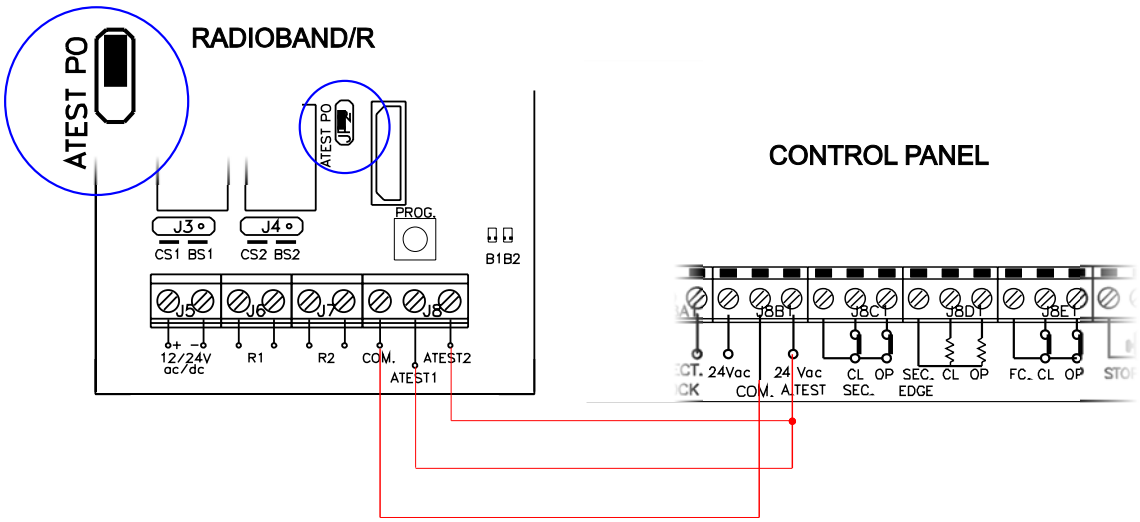
CONNECTION TO SAFETY EDGE CONTACT

b) Connection to security contact inlet



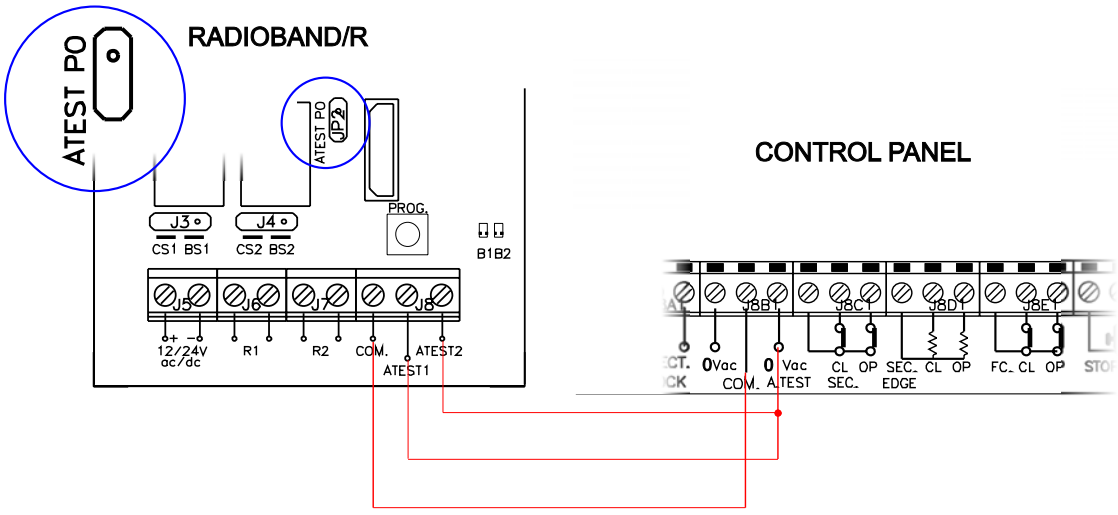
CONNECTION TO SECURITY CONTACT

c) Auto-test connection with negative polarisation



AUTOTEST CONNECTION
NEGATIVE POLARIZATION

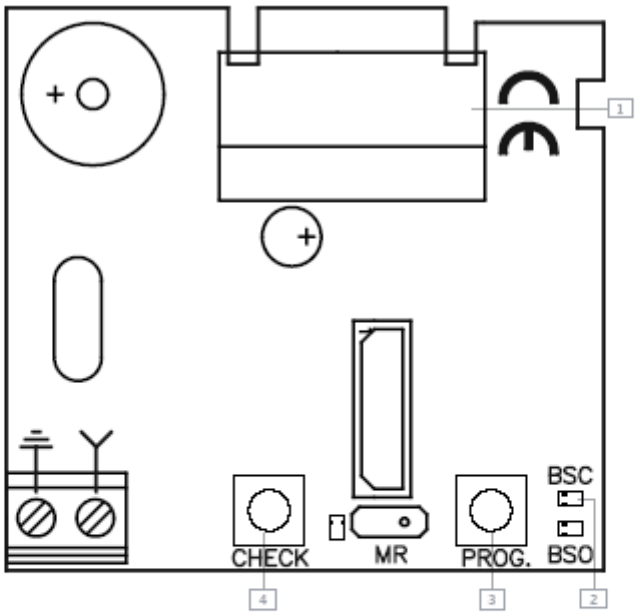
d) Auto-test connection with positive polarisation



AUTOTEST CONNECTION
POSITIVE POLARIZATION

*** Once the system has been installed, check it works correctly by enabling the safety edge on the ends of the door.**

2.3 RADIOBAND/RC-RCS



1 Conector para cuadro de maniobra
Connecteur pour armoire de commande
Connector for control panel
Anschluss für Steuerung

2 Leds de indicación activación elemento de seguridad
Leds indiquant l'activation de l'élément de sécurité
Safety element activation indicator lights
Anzeigeleds für Aktivierung des Sicherheitselementes

3 Pulsador de programación
Bouton de programmation
Programming button
Programmschalter

4 Led y pulsador de verificación
Led et poussoir de vérification
Check led and check button
Check-Led und Check-Taster

Frequency	868.90MHz
Memory	6 Radioband-T
Power supply	pluggable
Power supply range	---
Consumption: idle/op.	18mA
Self-test input	incorporated
Power	< 25mW
Op. temperature	-20ºC to +85ºC
Seal	IP20
Box size	50x20x17mm
Range (guaranteed)	10 metres

INSTALLATION AND CONNECTIONS

Connection to a control panel using a connector for safety devices.

LIGHT INDICATORS

RADIOBAND/R-RC-RCS	In operation	In programming
Relay 1 LED	Normally off. Indicates the status of the relay output. If R1 is not connected, on.	On. Indicates the channel to be programmed.
Relay 2 LED	Normally off. Indicates the status of the relay output. If R2 is not connected, on.	On. Indicates the channel to be programmed.

OPERATION

The receiver checks that all the programmed bands are working properly. If a band is activated or if there is an error in its operation, the receiver activates the output relay.

MANUAL PROGRAMMING

RADIOBAND/RC-RCS makes it possible to store 6 RADIOBAND-Ts (3 on Relay 1 and 3 on Relay 2).

Press the receiver programming PROG button for 1s; a sound signal will be heard. The receiver will enter safety band closing programming mode (BSC). If the programming button is kept pressed, the receiver will enter safety band opening programming mode (BSO), moving cyclically from one really to another. Once the programming relay has been chosen for the transmitter you want to start using, send the programming code by pressing the transmitter. Every time a transmitter is programmed, the receiver will emit a sound signal for 0.5s. If 10 seconds pass without programming, the receiver will go out of programming mode, emitting two 1s sound signals. If, when programming a transmitter, the receiver's memory is full, it will emit 7 sound signals lasting 0.5s and come out of programming.

Note: For a right operation of the system, the transmitter has to be programmed in one receiver only.

RADIOBAND/T replacement: In case you need to replace a RADIOBAND/T, it is necessary to reset the system (see TOTAL RESET on next page) and reprogram all RADIOBAND/T used in the installation.

SYSTEM CHECK

This function has to be used to check the operation and range of all the devices once the installation has been carried out.

Press the receiver's CHECK button for at least one second to enter check mode. The indicator light will come on and four beeps will be heard.

Perform a complete door opening and closing manoeuvre. During the system check a beep will be heard every 1,5 seconds.

CORRECT OPERATION OF THE SYSTEM

If no other acoustic signal is heard on completing the manoeuvre, the system is operating correctly. Either press the CHECK button again or wait 5 minutes and the

RADIOBAND/RC-RCS will exit checking automatically, indicating with two beeps that the check has been correct. The check indicator light will go out.

DETECTION OF BAND FAILURE

If the communication with a RADIOBAND/T fails during checking, or the communication is deficient (for instance, too many communication retries or poor coverage), the RADIOBAND/RC-RCS emits three consecutive beeps, indicating that an error has occurred. Halt the door manoeuvre and press the safety bands installed to detect what has failed.

- If a single beep is heard on pressing a band, this means that the band is correct.
- If three consecutive beeps are heard on pressing the band, this means that the band has failed.
  In this event, it is recommended changing the orientation of the transmitting-receiving aerials or installing an AED-868 or FLAT-868 outdoor aerial to ensure the desired range.

On exiting check mode, seven consecutive beeps will be heard and the indicator light will flash continuously.
Perform another system check until the result is correct.

Signal coverage

After pressing one of the installed bands, continuous flashes, ranging from 1 to 5, indicate the signal coverage for this band at the time it was pressed.

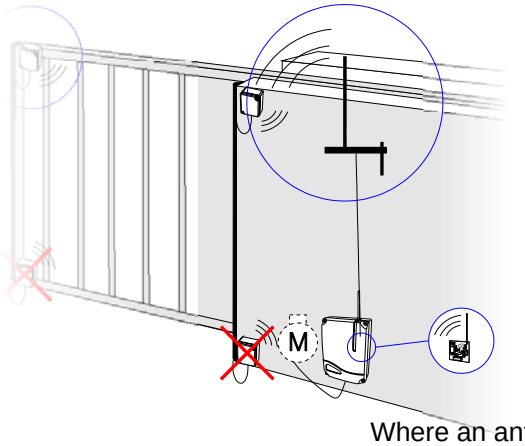
Number of check LED flashes	Coverage	Result of check
1	Very weak	Band failure
2	Weak	OK
3	Normal	OK
4	Good	OK
5	Very good	OK

TOTAL RESET

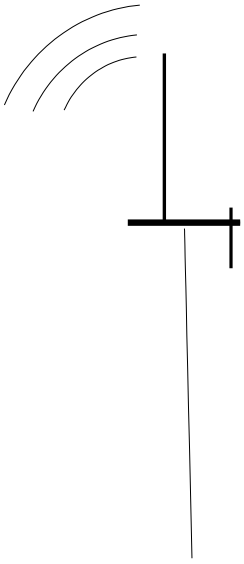
In programming mode, keep the programming PROG button pressed down and make a bridge with the "MR" reset jumper for 3s. The receiver will emit 10 warning sound signals and then more at a faster frequency, indicating that the operation has been carried out. The receiver will stay in programming mode.
If 10 seconds elapse without programming, or if you press the programming button quickly, the receiver will go out of programming mode, emitting two 1s sound signals.

INSTALLATION ADVICE

An AED-868 or FLAT 868 antenna extension to 868 MHz should be installed for greater range.
Install the external antenna and its cable at a place where they are protected against damage and vibration, and where no obstacles are expected between all RADIOBAND antennas.



Where an antenna extension is not installed, place the receiver card antenna in vertical position



868MHz AED-868 or FLAT 868 antenna extension with RG 58 coaxial cable

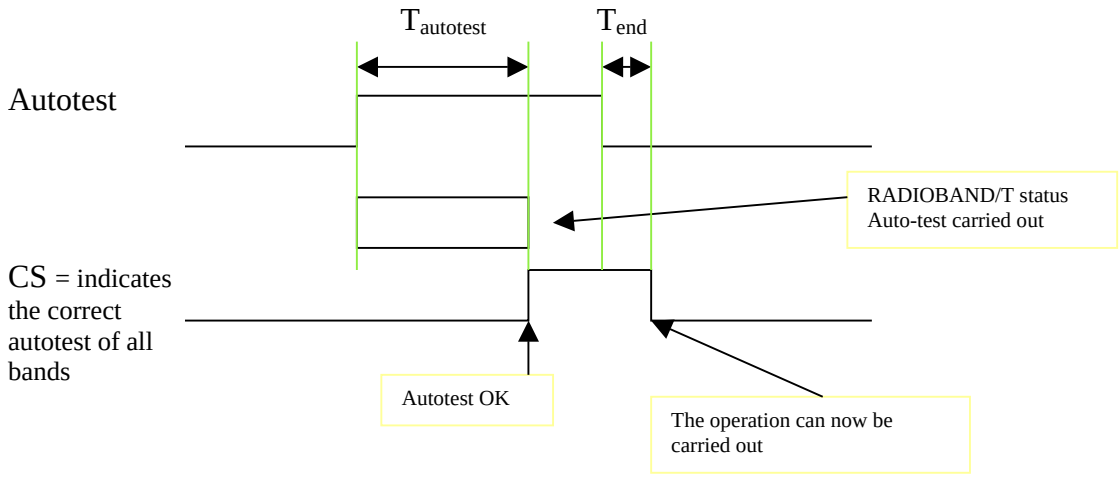
*** Once the system has been installed, check it works correctly by enabling the safety edge on the ends of the door.**

3. AUTO-TEST FUNCTION

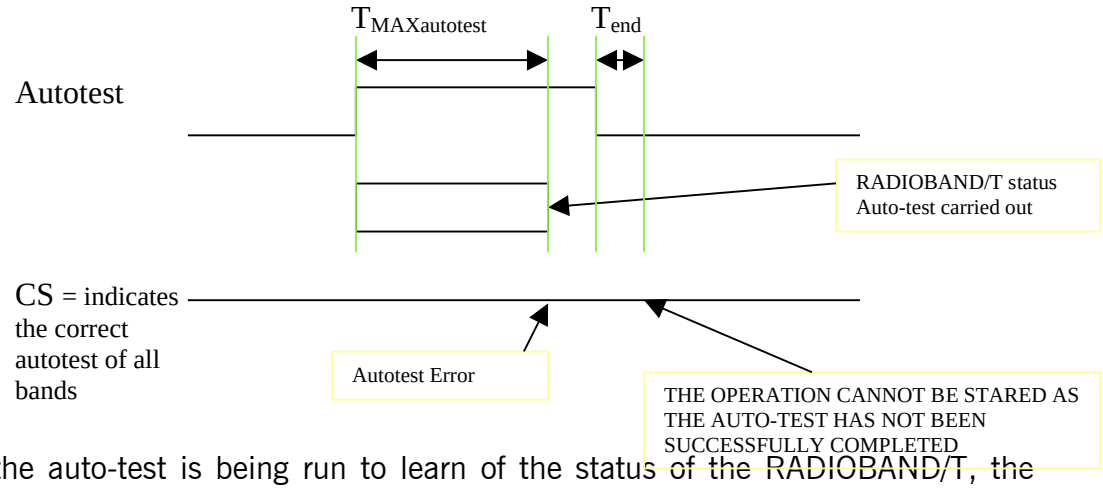
3.1 AUTO-TEST DESCRIPTION

Before starting operations, the control panel must check that the entire security system is working correctly. The control panel shall not start Auto-test during a pressed safety edge output.
To make this check, the panel must act on the auto-test signal.

- AUTO-TEST timing correct



- AUTO-TEST timing error


TMAXautotest
Tend
Autotest
RADIOBAND/T status
Auto-test carried out
CS = indicates the correct autotest of all bands
Autotest Error
THE OPERATION CANNOT BE STARED AS THE AUTO-TEST HAS NOT BEEN SUCCESSFULLY COMPLETED

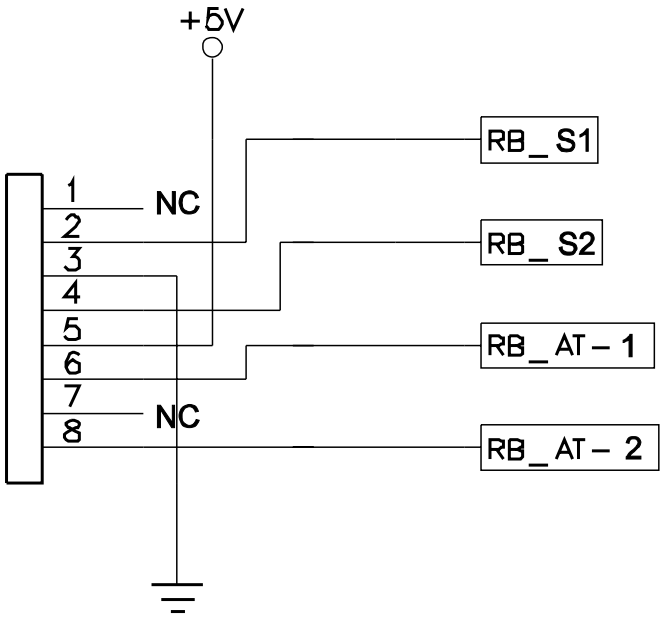
While the auto-test is being run to learn of the status of the RADIOBAND/T, the RADIOBAND/R questions the status of the different Safety edges inputs. This process ensures the correct working order of the following parts:

- Safety edge input
- RADIOBAND/T (1 or several).
- RF Channel (if there is any interference)
- RADIOBAND/R (control and RF)

Switching off the output relay means that the control status and the correct working order of the RADIOBAND/R output relay has been checked.

Description	T_{min}	T_{type}	T_{max}
Tauto-test	10ms		3s
Tend		50 ms	

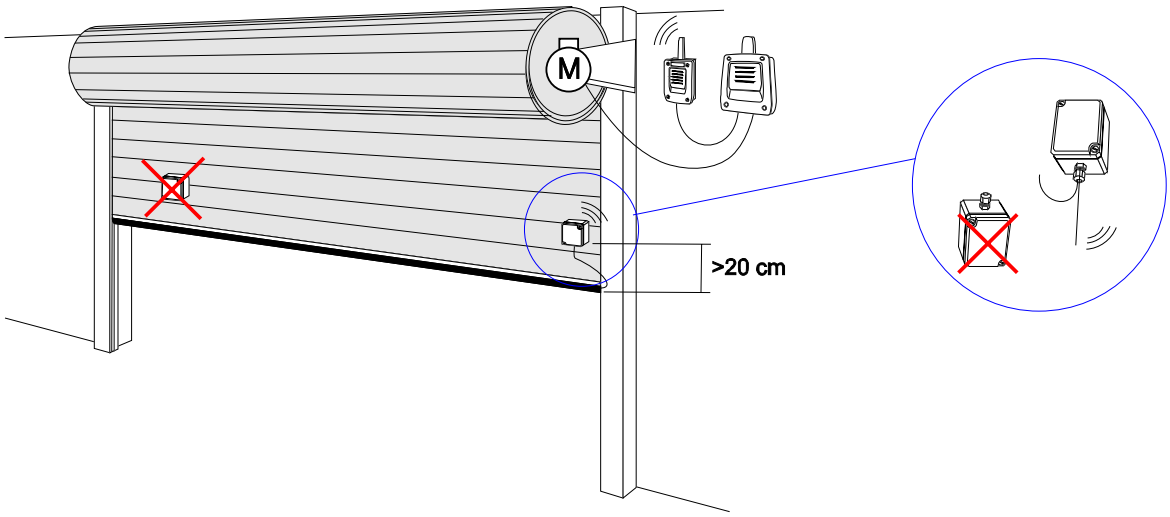
3.2 RADIOBAND/RCS CONNECTIONS



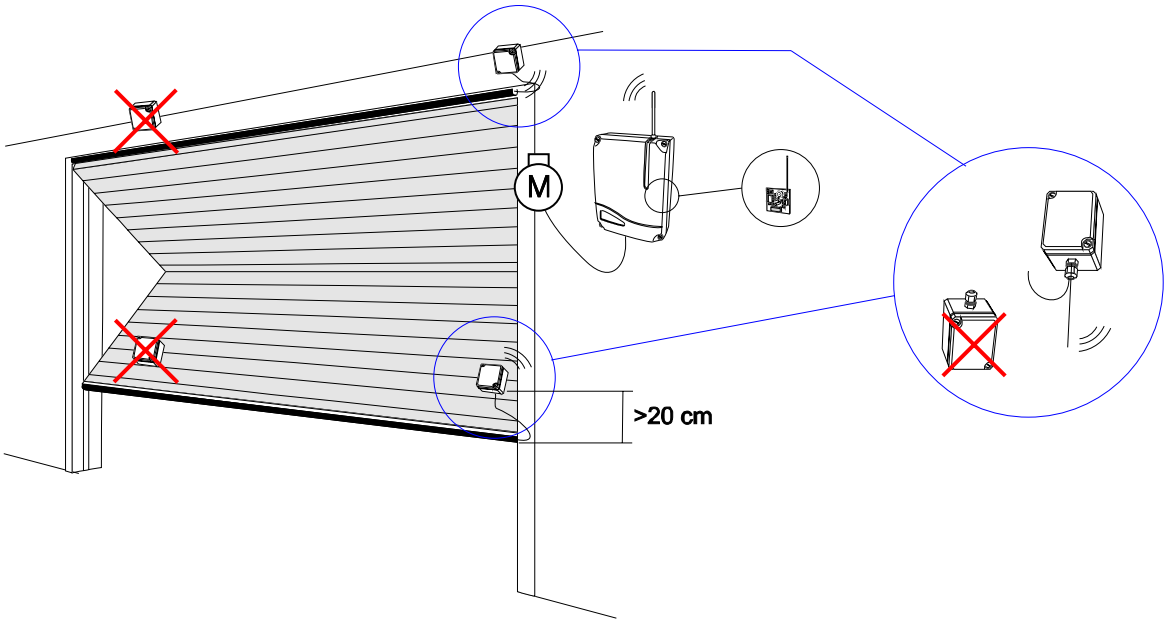
1- Not connected
2- RB_S1: Outlet 1 Radioband activation
3- Mass
4- RB_S2 Outlet 2 Radioband activation
5- 5Vdc power supply
6- RB_AT-1: Inlet 1 Radioband auto-test
7- Not connected
8- RB_AT-2: Inlet 2 Radioband auto-test

4. RADIOBAND SYSTEM INSTALLATION RECOMMENDATIONS

4.1 Installation on roller door with control panel and RADIOBAND/R.

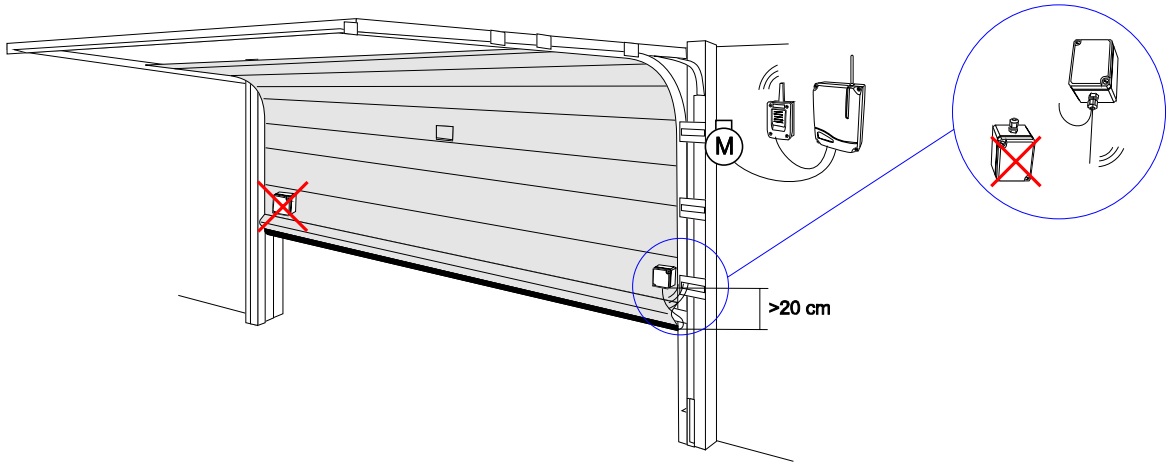


4.2 Installation on two-leafed swing door with control panel and RADIOBAND/RC-RCS.

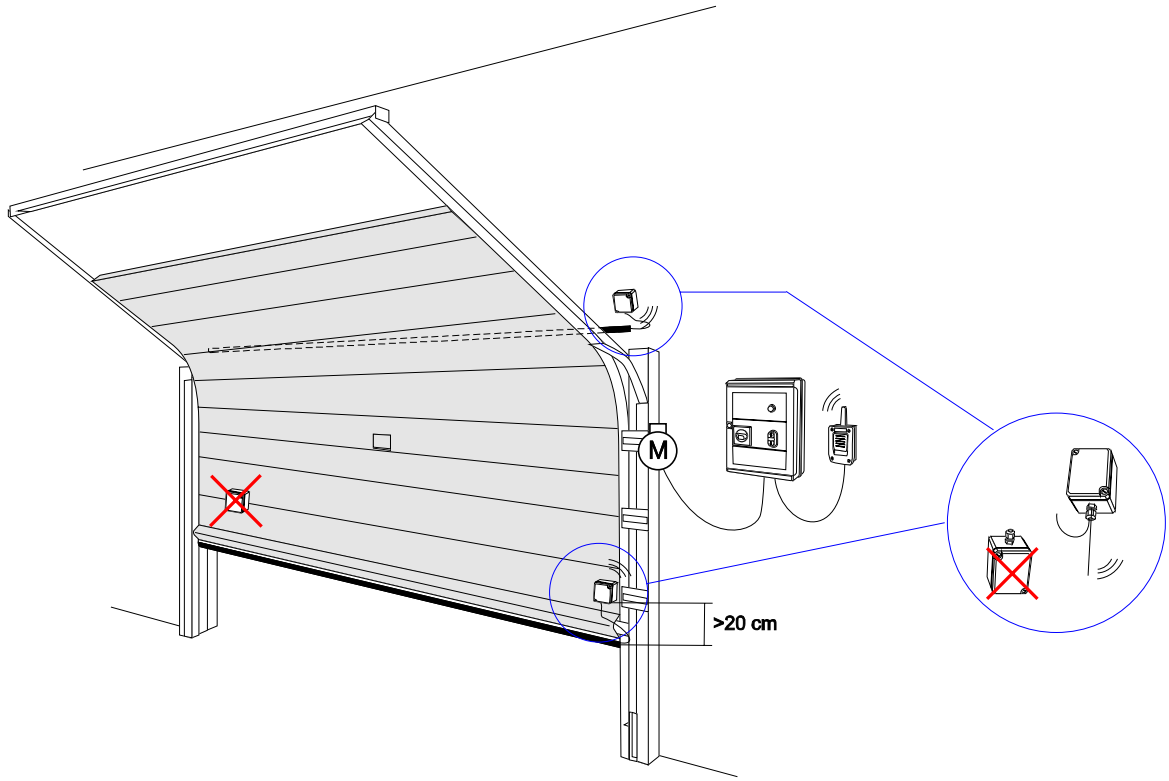


RADIOBAND/R.

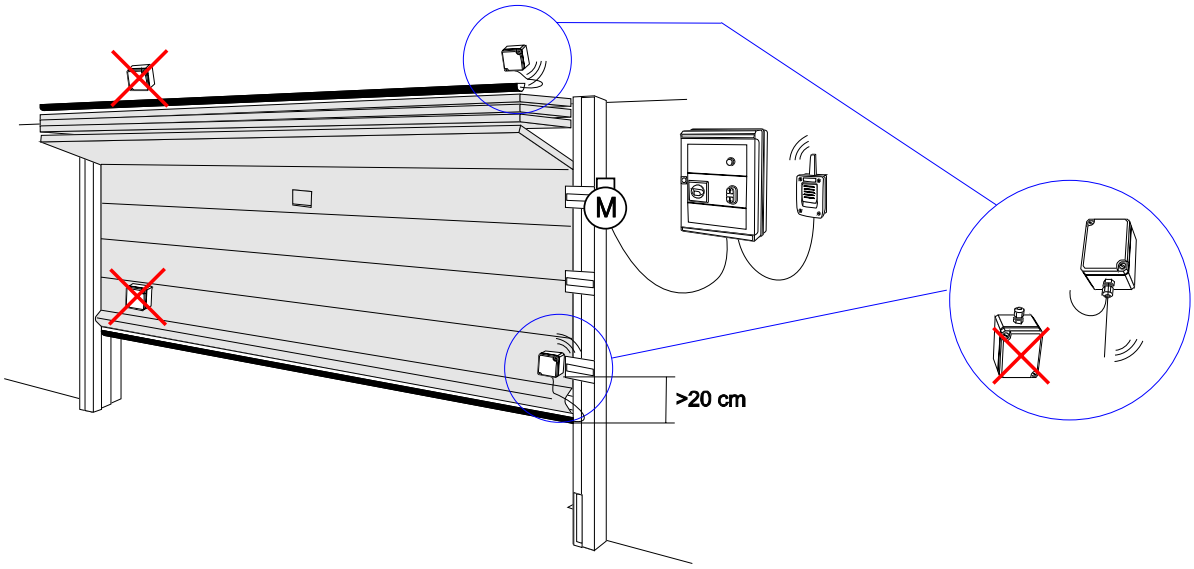
4.3 Installation on horizontal sectional door with control panel and



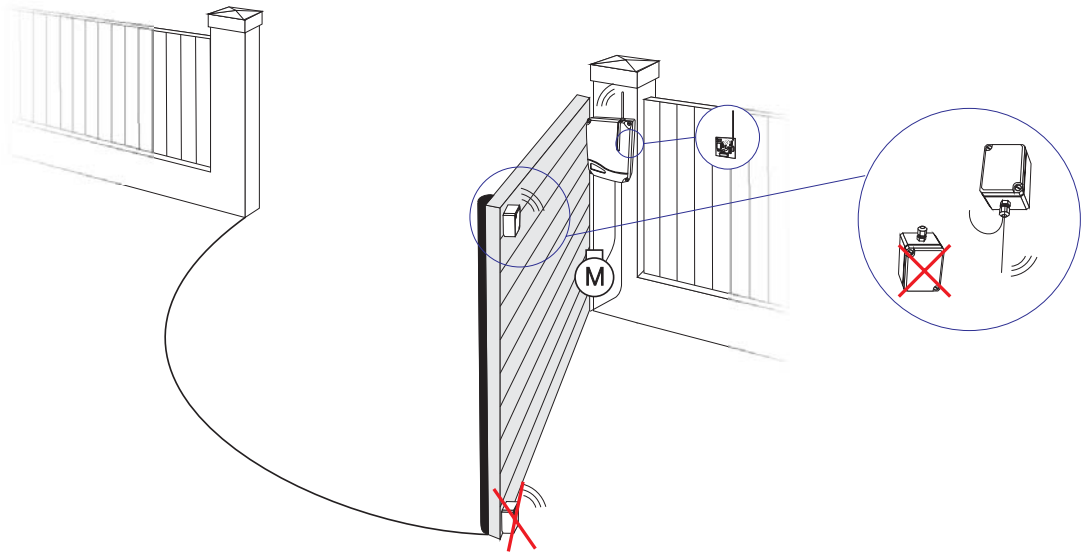
4.4. Installation on angled sectional door with control panel and RADIOBAND/R.



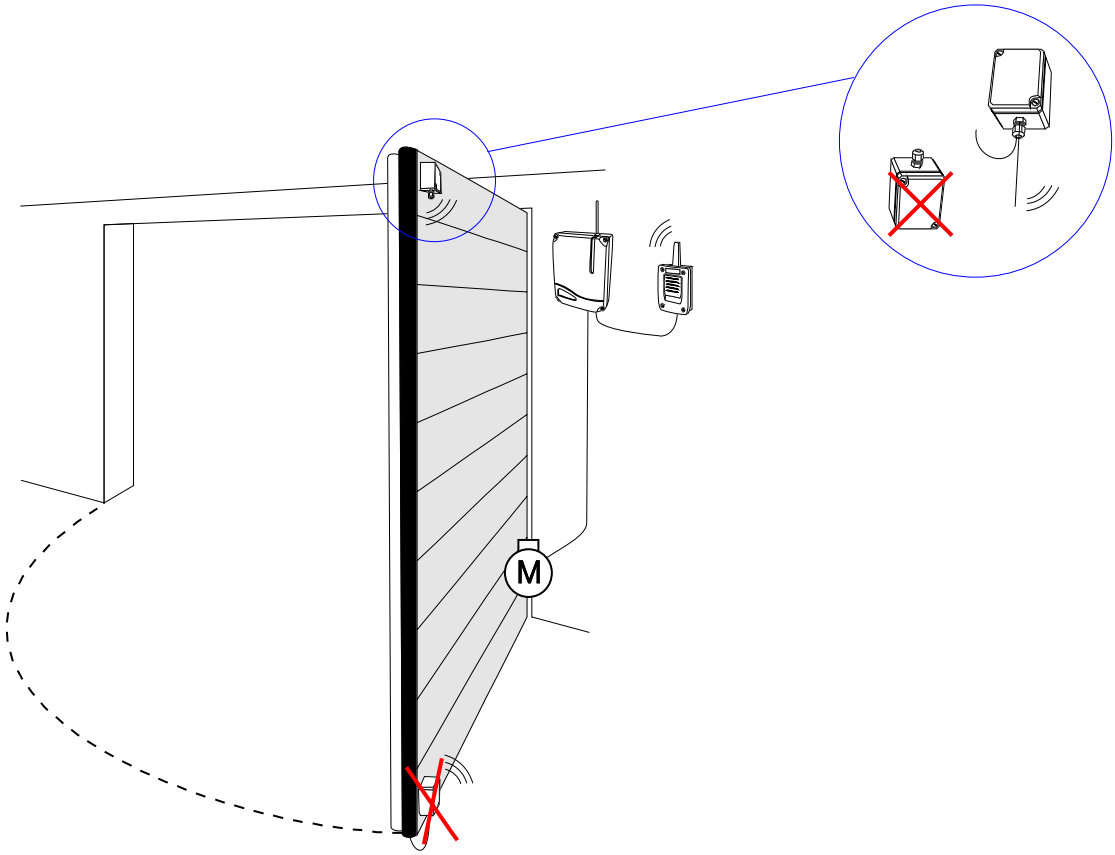
4.5 Installation on stackable sectional door with control panel and RADIOBAND/R.



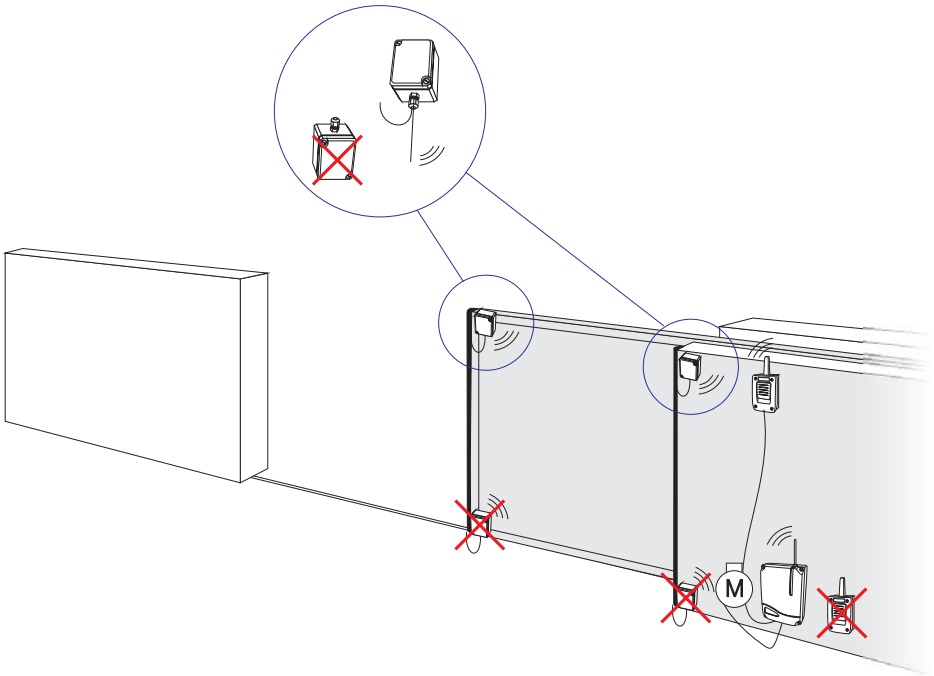
4.6 Installation on one-leafed residential folding door with control panel with RADIOBAND/RC-RCS card connector.



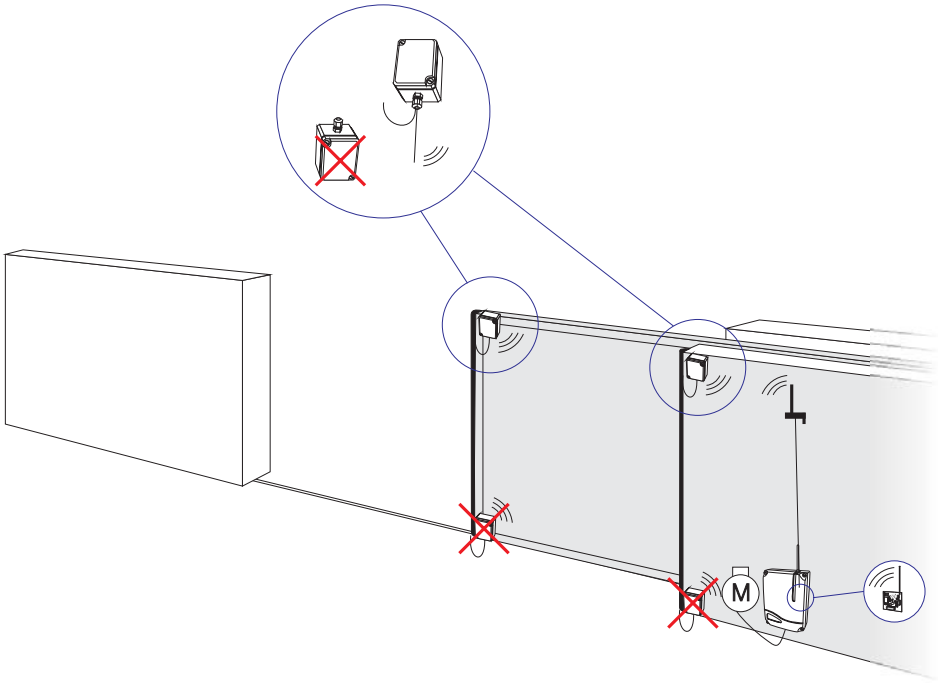
4.7 Installation on one-leafed folding door for communities with control panel and RADIOBAND/R.



4.8 Installation on one-leafed sliding door with control panel and RADIOBAND/R.



4.9 Installation on sliding door with control panel and RADIOBAND/RC-RCS card connector.



4.10 Installation on guillotine door with control panel and RADIOBAND/R.